

## A Career and College Ready Agenda

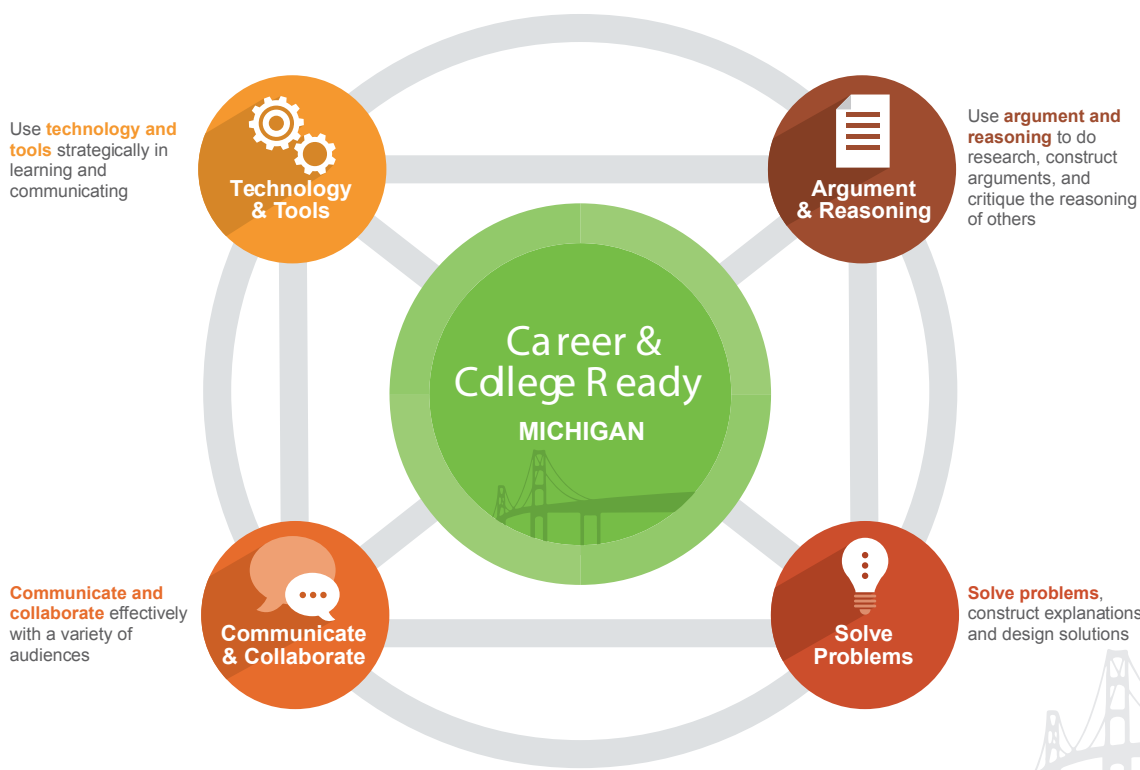
With the passage of the Michigan Merit Curriculum in 2006, no longer is it acceptable to graduate high school with credit based on seat time. Instead, all Michigan students are required to demonstrate proficiency in required academic standards in order to receive a diploma. In 2008, Michigan released the K-7 Science Grade Level Content Expectations and the [Essential Science Content Expectations](#) for 8th grade - high school. These standards constitute the minimum content for the three required science credits. More information is available in the FAQ posted at [www.michigan.gov/highschool](http://www.michigan.gov/highschool).

Along with an increased focus on flexible learning options and competency-based recognition of student learning, there is also a demand for a skilled workforce prepared for the STEM jobs driving the Michigan economy. "This has put a spotlight on the need for teaching rigorous content with multiple access points and opportunities for success. Our challenge now is to support schools with instituting systems of instruction that provide all students with opportunities to learn this content."

(From Michigan's ESEA Flexibility Request (pg.23): [http://www.michigan.gov/mde/0,4615,7-140-37818\\_60094---,00.html](http://www.michigan.gov/mde/0,4615,7-140-37818_60094---,00.html).)

## Model Courses

There are varied pathways to help students successfully demonstrate proficiency in meeting the content defined by [Michigan's Essential Science Content Expectations](#) for high school. The State of Michigan doesn't require end-of-course exams; the only state-required high-school assessment is the Michigan Merit Exam (MME), administered at the end of a student's junior year. With credit based on student-demonstrated proficiency with the content based on district-developed measures, districts have flexibility in designing courses that meet the needs of their student population and take full advantage of the highly qualified status of their staff. Texts and other curriculum materials may serve as course models; other models might be available through your ISD/RESA or [Math/Science Center](#).



### Career & College Ready Instruction

Arranging the content represented by the standards into courses is just one step in implementing the new standards. The National Research Council has outlined [8 practices for K-12 science classrooms](#) that describe ways students should be engaged in the classroom as a reflection of the practices of actual scientists and engineers. When students “do” science the learning of the content becomes more meaningful.

Courses should be carefully designed so that students have opportunities to not only learn the essential science content but to practice being a scientist or engineer. These opportunities set the stage for students to transition to college or directly into STEM careers.

### Practices for K-12 Science Classrooms

- 1 Asking questions (for science) and defining problems (for engineering)
- 2 Developing and using models
- 3 Planning and carrying out investigations
- 4 Analyzing and interpreting data
- 5 Using mathematics and computational thinking
- 6 Constructing explanations (for science) and designing solutions (for engineering)
- 7 Engaging in argument from evidence
- 8 Obtaining, evaluating, and communicating information